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ABSTRACT

To determine if creative behavior could be developed in adolescents, a longitudinal (three year) evaluation of the Living Arts Program (held in the Dayton, Ohio schools) was conducted. An experimental group of 188 eighth, ninth, and tenth graders and a matched control group were compared with analysis by sex. The experimental group had the opportunity to participate in many facets of the arts and to study in depth one or more of the arts through exhibitions, lecture-demonstrations, performances, and individual presentations by guest artists and Living Arts staff. The results indicated that students enrolled in the program, when compared to a matched control group, became more deeply involved in cultural activities of the community, developed verbal skills (including fluency, flexibility and originality), and engaged in more independent creative activities. (CD)

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A LONGITUDINAL STUDY

OF THE

DEVELOPMENT OF CREATIVITY

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LIVING ARTS PROGRAM

DAYTON, OHIO

TITLE III, ESEA

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A LONGITUDINAL STUDY OF THE DEVELOPMENT OF CREATIVITY

by

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Charles E. Skipper

Chapter I

INTRODUCTION

Education for creativity is important today because the very art of being creative strengthens one's motives to preserve the results of man's constructive energies. In this time of conflict and change, if our society is to improve, our educational systems must help young people realize their full potential as curious, responsive sensitive, imaginative human beings.

The Living Arts Program's encompassing goal is to create an environment which places high value on the creative person and the creative process.

The aims of the Program are to identify, nurture and evaluate the creative potential of youngsters whose interests lie in the Fine Arts: Creative Writing, Dance, Drama, Music and the Visual Arts.

Students, grades 5 - 12, selected as to their keen interest and creative potential, are participating in the Living Arts Program.

Selected students have the oppo rtunity to participate in the many facets of the arts and to study in depth one or more of the arts.

Although a student selects one art area in which to concentrate, he is encouraged to explore and to experiment with the other art areas developing, hopefully, new interests, ideas and skills.

Through the use of specialists as instructors, minimum class sizes, and superior facilities, students have the opportunity to develop their individual abilities and interests.

Students have the opportunity to investigate and gain further knowledge of the ways and means man has devised to express himself through the arts and the inter-relationships of the arts.

Professional artists in all five areas are engaged to work directly with students sharing their experiences and knowledge about their craft and profession. All students, K-12, in the Dayton schools share in performances, exhibitions, and lecture-demonstrations through individual school and classroom presentations by guest artists and by the Living Arts staff.

Teachers and administrators have participated in planned, sequential in-service training programs through conferences, seminars, and workshops conducted by the Living Arts staff and guest artists.

Parents of selected students have the opportunity to participate in programs to hear the Living Arts staff and guest artists discuss the arts and creativity, to share with each other problems and/or learn about new plans and activities in the Center.

The Living Arts Program functions after school hours and on Saturdays and is located at 612 Linden Avenue; Dayton, Ohio.

The Living Arts Program is a supplementary service and is designed to enhance, not to supplant, the educational opportunities inherent in the schools of Dayton.

The ultimate aim of the Living Arts Program is to make students aware of the world around them and to use this cognizance as a source for expressing themselves through the arts.

Research on the development of creative behavior has been conducted on an increasing scale since J.P. Guilford, in 1950, emphasized the appalling neglect of the study of creativity (6). The first wave of research dealt with the identification of creative talent. The second wave, following the suggestion of Torrance, concerned experimentation with teaching procedures that hopefully will stimulate students to think independently, to test their ideas, and to communicate them to others.

According to Guilford, creativity is "something that lies behind behavior that is imaginative and inventive". (6) It is found in clearest form in some people: scientist, artist, writer; but it is shared by all. He sees creative thinking as involving divergent production, which is the generation of information from given information, where emphasis is upon variety of output from the same source. Divergent production includes such factors as fluency, flexibility, originality, and elaboration. Such other factors as sensitivity to problems and re-definition abilities are also in creative thinking.

Torrance (23) has defined creativity as a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on, identifying the difficulty, searching for solutions, making guesses, or formulating hypotheses about deficiencies, testing and retesting these hypotheses and possibly modifying and retesting them, and finally communicating the results. Torrance argues that this definition of creativity enables researchers to define operationally the kinds of abilities, mental functioning, and personality characteristics that facilitate or inhibit the process.

Taylor (18) suggests we think of creativity in terms of various levels:

1. Expressive creativity - Independent expression where skills, originality, and the quality of the product are unimportant, as in the spontaneous drawings of children.

2. Productive creativity - Artistic or scientific products where there is a tendency to restrict and control free play and develop techniques for producing finished products.

3. Inventive creativity - Inventors, explorers, and discoverers, where ingenuity is displayed with materials, methods, and techniques.

4. Innovative creativity - Improvement through modification involving conceptualizing skills.

5. Emergentive creativity - An entirely new principle or assumption around which new schools flourish.

By conceptualizing levels of creativity, Taylor hopes to reduce the frequent confusion of creativity and present interpretation of intelligence, scientific method and logic. His emphasis on fantasy and unconscious play as essential for creative behavior puts serious limitations on the interpretation of creative thought as the same as logical reasoning on the scientific method.

Creativity is sometimes contrasted to conformity and is defined as the contribution of original ideas, a different point of view, or a new way of looking at problems, whereas conformity is defined as doing what is expected without disturbing or causing trouble for others. Creativity has also been defined as a successful step into the unknow getting away from the main track, breaking out of the mold, being open to experience and permitting one thing to lead to another, re-combining ideas or seeing new relationships among ideas. Concepts such as originality, curiosity, imagination, discovery, innovation and invention are also prominent in discussions of creativity. (21)

In their study, Getzels and Jackson (4) defined creativity as a "fairly specific type of cognitive ability reflected in performance on a series of paper and pencil tests involving the ability to deal inventively with verbal and numerical symbol systems and with object-space relations. Scores on these tests depended on the number, novelty and variety of adaptive responses to a given stimulus task. They assumed that these creative thinking abilities are found to some extent in all persons.

Donald MacKinnon (12) has suggested there are types of creativity. In the first of these, the product of the creation is clearly an expression of inner states, e.g. the needs, perceptions, evaluations, etc. of the creator.

In this type of creativity, the creator externalizes something of himself into the public field. Examples of this kind of creativity would be found in the work of the expressionistic painter or sculptor, poet, novelist, playwright, or composer.

In the second type of creativity, the creative product is unrelated to the creator as a person, who in his creative work, acts largely as a mediator between externally defined needs and goals. In this kind of creativity, the creator simply operates on some aspect of his environment in such a manner as to produce a novel or appropriate product, but he adds little of himself to the resultant. Examples of this kind of creativity would be found in the work of the research scientist, the engineer and mechanical inventor.

J.P. Guilford, writing about creative abilities in the arts (5), states that artistic talent is not a unitary or uniform commodity, but is rather a collection of different component abilities or other traits. It is expected that the creative abilities of artists will be found to involve some factors distinct from, yet parallel to, those among creative abilities in fields such as science and management. Factors thought to be important in the arts are found among the whole collection of intellectual abilities as mapped out in Guilford's structure of the intellect. The thinking factors can be classified in three groups on the basis of the kind of action

performed on the content: cognition factors, production factors, and evaluation factors. Although a total creative act involves all three groups of factors, the production aspects are most conspicuous and most crucial. Among the production thinking abilities there is another distinction between convergent thinking, which leads to one right answer, and divergent thinking, which does not result in one right answer, but depends upon going off in different directions.

Among the divergent thinking abilities, some are recognized as being more creative than others - for example: fluency, flexibility and originality. Although they may contribute to reaching one right answer, they are most obvious in activities where that is not the case, such as in the arts, where some answers are merely regarded as better than others.

Four fluency factors have been identified. Two of them, word fluency and associational fluency have to do with the production of single words. In tests of word fluency the words produced must meet certain structural criteria such as listing words beginning with a certain letter. Associational fluency is measured by tests that involve listing words having some meaningful requirements, such as listing synonyms for a stimulus word. Ideational fluency is the ability to produce a succession of ideas meeting certain meaningful requirements, such as listing of things round or

of titles for a story plot. Quantity, and not quality, is important. The fourth fluency factor, expressional fluency, is the ability to put ideas into words. This is measured by tests requiring the putting together of words in appropriate, connected discourse.

Guilford has found two flexibility factors. One, which is found in verbal tests, is called spontaneous flexibility because the subject shows flexibility on his own initiation; the test items do not require it. It is possible that this trait might serve as the basis for very fanciful, creative imagination wherever it is found; for example, in artists and scientists alike. The second flexibility factor, found mostly in non-verbal tests, is called adaptive flexibility because it is important in the solution of problems, particularly those that require striking out in new and unusual directions.

The one factor of originality is indicated by varied tests that require unusual or uncommon responses, remote associations or connections, or clever responses. Originality may prove to be a temperamental or motivational variable, such as a general set to be unconventional or to avoid repeating what others have done.

In addition to factors of fluency, flexibility and originality, several other factors have been found to be

related to creativity. The ability to see problems is a cognition factor rather than a production factor, and is confined to seeing defects and deficiencies in such practical matters as everyday gadgets and implements. The factor of redefinition involves the ability to desert one interpretation or conception of an object and to adapt it to new functions or uses. It is a divergent thinking factor that involves the production of a shift of meaning of an object. The factor of visualization is the ability to think of changes or transformations of a figural kind in visually perceived objects. The relation of such an ability to work in the visual arts can be readily imagined. There might even be a parallel factor in the auditory field, enabling a composer to produce variations on a theme.

A factor of evaluation ability was hypothesized, not as a contributor to the production of creative results, but as a means of determining whether such results are good, suitable, correct or adequate. Three general evaluation factors were found. Logical evaluation is the ability to judge products on the basis of their logical consistency with given facts. Experiential evaluation is the ability to judge products in terms of consistency with past experience. A third factor of uncertain generality is perceptual evaluation which is measured by tests that emphasize comparisons of lengths of lines and total sizes of figures.

(It may, therefore, be related to the more limited length estimation factor that was previously known.) As for evaluation in the arts, the logical evaluation factor would not apply. Experiential evaluation abilities might account for aesthetic tastes in terms of aesthetic values. Perceptual evaluation abilities would have much bearing on the acceptability of art forms, visual, auditory or kinesthetic.

Guilford maintains that in the creative activities of everyday life, primary mental abilities other than those regarded as primarily creative are also important. For example, a verbal comprehension factor would be important for a creative writer, and a spatial orientation factor would be important for a developer of ideas in descriptive geometry. A visual memory factor would be important for artists, and an auditory memory factor may play a similar role for the composer.

Minimal levels of these primary mental abilities related to creativity are desirable for success in various artistic activities. They are not only necessary but, when possessed in adequate amounts, are sufficient assuming adequate motivating conditions. In the process of surveying the resources of creative artists of any kind, whether for the sake of better understanding of talent or for the practical purposes of prediction and guidance, it would be well to ask whether any of the intellectual factors may play a significant role.

Chapter II

CHARACTERISTICS OF THE CREATIVE PERSON

Torrance (19) after reviewing the literature on the creative personality, concluded that creative individuals are less interested in small details and practical and concrete aspects of life, and are more concerned with meanings, implications and symbolic equivalents of things and ideas.

MacKinnon (12) studied the personal characteristics of creative architects and found that the more creative exhibit a sensitive awareness of self and others, and openness to their feelings and emotions, and wide-range interests, many of which are regarded as feminine in our culture. The highly creative have the ability to tolerate the tension that arises from apparent polar opposite needs and values. For example, creative architects value both theoretical and esthetic concepts. These values seem contradictory and are; but the creative person with his complex personality, searching for richness and diversity, can balance these different values in such a way that adds to his perception of life.

According to Torrance (16), a creative child may possess a need to know himself and his environment and to seek out new experiences and examine and explore stimuli. He is

likely to exhibit originality; imagination and experimentation; independent, individualistic, courageous and nonconforming behavior; unusual flexibility in meeting emergencies; unwillingness to give up; constructiveness; daydreaming; and preoccupation with an idea or problem. Further, Torrance (21) believes that the creative child is likely to be "one-sided" in development, to want to learn on his own, to attempt difficult tasks, to try to achieve uniqueness. As a result of his divergency, he is likely to feel isolated and psychologically estranged from parents, teachers, and peers.

Taylor (17), writing on the motivational characteristics of creative persons, states that the creative person is curious, enterprising in his ideas, intellectually persistent, tolerant of ambiguity; he shows initiative in his area of work; he likes to think and to manipulate ideas; he has an inner need for recognition; he needs variety and autonomy; he has a preference for complex order and for changes therein; he has an esthetic and to some extent religious orientation; he resists premature closure and crystallization of concepts, though he has a strong need for ultimate closure; he desires mastery of a problem; he finds challenging the intellectual ordering of the apparently unclassifiable; and he wants to improve upon currently accepted orders and systems. The use of

passional sources of energy and kinesthetic cues may be important. High energy with vast work output through disciplined work habits is usually found. Other traits which have been suggested are a willingness to take greater and more long-range risks for greater gain and a tendency to accumulate an over-abundance of raw materials for the task at hand coupled with a willingness to discard some of it in forming final products. Concerning personality characteristics, Taylor states that creative persons are more autonomous than others, more self-sufficient, more independent in judgment (they go against group opinion if they feel it is incorrect), more open to the irrational in themselves, more stable, more feminine in interests and characteristics (especially in awareness of their impulses), more dominant and self-assertive, more complex, more self-accepting, more resourceful and adventurous, more radical (Bohemian), more self-controlled, and possibly more emotionally sensitive, and more introverted, and bold. Creative people in different fields may have different personal characteristics. For example, in art, the spatial sense and visual imagery may play a special role.

Guilford and his associates (Christensen, Frick and Merrifield, 1957) were interested in determining what

relationships might exist between measures of temperament and motivation and measures of creative performance. They found that creativity appears to be related to impulsiveness, and inclination away from neuroticism. Those high in originality tend to be interested in aesthetic expression, in meditative or reflective thinking, and appear to be more tolerant of ambiguity and to feel less need for discipline and orderliness.

Getzels and Jackson (4), in studying the creative adolescent, found their high creative group significantly superior to the school population in scholastic achievement, although it was below the mean in IQ of a highly intelligent group. Other characteristics of their high creative group were a sense of humor, playfulness, and the ability to produce new themes and to go off in new directions. They were not success oriented by conventional adult standards, and they placed highest value on qualities other than those necessary for success and teacher preference.

Wallach and Kogan (25) believe in order to list the characteristics of creative children it is necessary to know whether creativity is present in the context of high or low intelligence. In their study they found that children high in both creativity and intelligence showed the least doubt and hesitation and the highest level of self-confidence, and they displayed the least tendency

toward depreciation of oneself and one's work. Concerning companionship, these children were sought out by their peers more often than any other group, and they also sought the companionship of others most actively. This group showed the highest levels of attention span, concentration, and interest in academic work. In these respects, according to Wallach and Kogan, these high creativity - high intelligence children reflected highly desirable modes of conduct. However, this group was also high with regard to disruptive, attention-seeking behavior. They may have been brimming over with eagerness to propose novel, divergent possibilities in the classroom, in the face of boredom with the customary classroom routines.

The high creative group with low intelligence may be at the greatest disadvantage in the classroom. This group was found to be the most cautious and hesitant, the least confident and self-assured, the least sought after by their peers as companions and was quite avoidant of the companionship to others. These children were the most deprecatory of their own work and the least able to concentrate and maintain attention. In terms of disruptive attention seeking, this group was high, like the high creativity - high intelligence group suggested enthusiasm and over eagerness, that of high creativity - low intelligence group suggested an incoherent protest against their plight.

Creative Process

Most writers agree on the description of the creative process. Torrance (21), who reviewed the literature, found most writers agreeing on the following four steps: preparation, incubation, illumination, and revision. Torrance suggests a process flows something like the following. First, a sensing of a need of deficiency, random exploration and clarification of the problem. Then ensues a period of preparation accompanied by reading, discussing, exploring and formulating many possible solutions, then critically analyzing these solutions for advantages and disadvantages. Out of all this comes a new idea. Finally, there is experimentation to evaluate the most promising solution for eventual selection and perfection of the idea. Such an idea may become an invention, scientific theory, improved product of method, novel, musical composition, painting or new design.

Chapter III

DEVELOPING CREATIVE ABILITIES THROUGH EDUCATION

Guilford (8), writing about basic problems in teaching for creativity, believes most training should be general rather than specific. He states creative thinking is best distinguished by the fact that there are novel aspects to it - novel for the thinker himself. Novelty is the key word in the recognition of creativity, and it is novelty within the context of the person's own development. In large part, development of creativity on the part of students will depend upon changed attitudes of both teacher and student. He quickly adds, "It is not the acquisition of information, as such, that is harmful to creative performance, for invention rests upon prior information. It is the attitude toward information that often gets in the way of creative thinking."

Some educators, contemplating the application of an enlarged emphasis on divergent thinking, seem to fear that the outcome may be a classroom of wisecracking beatniks. Guilford believes the antidote should be a counteracting dose of training in evaluative thinking, involving the development of standards and criteria and learning how to apply them effectively.

According to Torrance (20), the research evidence in favor of deliberate efforts to improve the quantity and

quality thinking is impressive. Deliberate methods such as brainstorming, creative problem solving, synectics (creative problem solving based on the idea that creative efficiency will be increased if people understand the phychological processes by which they operate), and bionics (a similar method using analogies to biological and electrical phenomena as a source of generating new ideas) have proven successful.

Torrance offers several suggestions that teachers can use to provide the conditions conducive to creative thinking. He suggests offering a curriculum with plenty of opportunities for creative behavior; developing the skills of inquiry, creative research and creative problem solving which are not required in learning by authority, rewarding creative expression through the kinds of behaviors we encourage and by the way we respond to curiosity needs; and providing for continuity of creative development. He encourages the teacher to work hard to develop a creative relationship with his pupils. This requires a willingness on the part "to let one thing lead to another, to embark with the child on an unknown adventure", and a friendly environment and mutual understanding and respect for the dignity and worth of the individual.

Torrance also cites the extensive work of Ligon, who attempted to establish age-level characteristics for the

development of the imagination of vision from birth to age 16. He also developed lists of methods for guiding this and other dimensions of growth. For children from birth to age six, he recommends encouraging the child to explore, providing flexible toys, encouraging independence and discovery and patiently answering questions. In the elementary years it is important to encourage role playing in adult activities, to provide many opportunities for the expression of originality and ingenuity, to provide experience in planning and carrying out ideas, and to display creative products. In the high school years, it is important to help the student make decisions, to challenge him to exciting but difficult projects, to teach learning skills and creative problem solving and to provide food for thought.

Myers and Torrance (15) offer the following five principles for rewarding creative thinking children:

1. Treat questions with respect.
2. Treat imaginative ideas with respect.
3. Show your pupils that their ideas have value.
4. Occasionally have pupils do something "for practice" without the threat of evaluation.
5. Tie in evaluation with causes and consequences.

In this study the authors asked teachers to report their experiences in attempting to apply the five principles

to teacher-learner situations. They found at least ten characteristics present among the teachers who could not apply one or more of the accepting, supporting principles. Collectively, they were authoritarian, defensive, dominated by time, insensitive to pupils' intellectual and emotional needs, lacking in energy, preoccupied with their information - giving functions, intellectually inert, disinterested in promoting initiative and self-reliance in their pupils, preoccupied with disciplinary matters, and unwilling to give much of themselves in the teaching-learning compact. The authors conclude that values are a major concern in understanding human behavior, and that it is time to begin understanding the main forces in the teacher's life and allow for the expression of creative abilities in themselves and their students.

Torrance (24) describes an experimental program, "Man, Nature, and the Arts", a seminar for high school students to increase the students perception and understanding of the natural and man-made worlds. The seminar with small enrollment emphasized awareness and perception and were conducted by eminent people from the University of Minnesota and from art and cultural institutions in the Twin Cities. Participants in the seminars achieved higher scores on the tests of creative thinking than any other educational groups which had been tested with these particular measures. A second

seminar group gained significantly in the areas of originality and elaboration but not in ideational fluency and flexibility.

Klausmeier (9) offers the five following principles, applicable to all age levels, for encouraging creativity; encourage creativity in many media; foster divergent production; foster a creative personality; encourage continuing creative expression; and encourage productivity. He emphasizes the importance of the teacher in encouraging original expression. One of the most effective means that can be used is rewarding creative behavior when it occurs. Merely letting the student present original ideas and attempting to understand his reasoning are often enough. Displaying creative behavior himself will also encourage creativity in his pupils. To make the creative student feel comfortable in the school setting, the teacher can encourage a wide range of approved behavior patterns in the classroom.

George I. Brown (3) illustrated in a controlled study that creative sub-selves and non-creative sub-selves developed and crystallized around specific symbols could be triggered by invoking the specific symbol. A comparison of mean scores between tests of creative abilities given under conventional and triggered conditions revealed significant differences at the .001 level. The creative sub-self scored showed a high preference for complexity, and the non-creative

sub-self scored showed a preference for simplicity on the Barron-Welch Art Scale.

Maltzman (14) reviewed the experimental research that is relevant to the problem of devising techniques for increasing originality. He quotes Mearns' work which emphasized that to facilitate the originality of school children in the arts, the teacher must reinforce, and manifestly approve the student's original efforts. The teacher is advised to approve of only the genuinely original effort, and to wait patiently for the appearance of original behavior which is fostered by a "permissive atmosphere", the absence of "drill" and excessive discipline. According to Mearns, original behavior appears eventually because all normal children have an urge, energy, or impulse to be creative. Maltzman suggests that the early psychological literature tended to agree upon a small number of different procedures for increasing originality. One training procedure was to present an uncommon stimulus situation, a situation for which common or conventional responses may not be readily available. Relatively uncommon responses may be evoked as a consequence. Another procedure is the evocation of different responses to the same stimulus situation. Under such conditions the successive responses may become more uncommon. A third training procedure is the evocation of uncommon responses as textual responses.

According to Maltzman, the fundamental problem in the training of originality is to devise a means of increasing the frequency of uncommon behavior. Once it occurs, reinforcement may take place, thus increasing the probability that other original behavior will occur. He described a procedure used in experiments by himself and his associates which consistently facilitated originality. This procedure involves the repeated presentation of a list of stimulus words in a modified free association situation accompanied by instructions to give a different response to each stimulus. Under these conditions, the responses became more uncommon. When presented with new stimulus materials, subjects receiving such training are reliably more original than subjects receiving no training.

Torrance (18) reports a study which examined the effects of a training session using a set of questions or principles for stimulating new ideas and the effects of motivation toward quantity or quality or ideas on the creative behavior of elementary pupils. The results showed that pupils in the primary grades, with the possible exception of the first, can in a short period be taught a set of principles that will enable them to produce more and better ideas than they would without training. The results provide no support for motivating pupils to produce a quantity of ideas without considering quality.

Wallach and Kogan (25) have emphasized the importance of freedom from the pressure of time limits. They stress the lessening of valuational pressures, and the maintenance of a state of "letting things happen" in encouraging creativity. On the basis of their ability to create a game-like, permissive atmosphere within a segment of the school day by bringing in individuals who were disassociated from the standard intellective-achievement value matrix, they have proposed a creativity training program in which a school system would provide personnel who would travel from one class to another for the purpose of "playing games" ("games" being the kinds of creativity procedures used in their study). These tasks should be perceived by the children as games which, not unlike music and art instruction which is provided by special personnel, are outside of the academic-evaluation setting. Wallach and Kogan believe that only the most capable of regular classroom teachers would be able to establish the necessary non-evaluational atmosphere, given their strong association in the children's eyes with success and failure evaluation, and given their own committments to the more traditional parts of the curriculum. The success of such a training program depends upon the transfer effects from special training to the academic subject matter areas. In addition, Wallach and Kogan recommend that teachers be taught to de-emphasize the success-failure aspects of the learning process and to

encourage children to approach school assignments in a spirit of associative play, and that education proceed in part by "inductive teaching" or the "discovery method", both of which require the child to go through the steps by which a particular piece of knowledge was achieved and create the situations in which intelligent questions are likely to be asked. The "discovery method" involves associative modes of thinking in the child and, therefore, is of relevance for both creativity and intelligence.

Parnes and Meadow (16) found that a creative problem-solving course, in which the brainstorming principle was emphasized, produced a significant increase in productivity on five of seven tests of creative ability. Further they found that increased productivity in creative thinking produced by a one-semester Creative Problem-Solving Course persisted for a period of eight months or more after the termination of the course.

The results of a 1969 study of the Living Arts Program are found on pages 27 through 29. The findings indicate that the female experimental group significantly increased its creative behavior when compared to the female control group based on the Things Done On Your Own Checklist. We can infer that educational, cultural and creative experiences in the Living Arts Program served as stimuli for the girls to engage in significantly more independent creative activities.

No statistically significant increase was obtained when analyzing the data for the males.

Both male and female experimental groups showed significant increases over the control groups in the number of places visited in the community, the number of performances attended, the number of activities and the total number of community activities of a creative nature. From this data it can be inferred that participation in the Living Arts Program had a direct effect in encouraging the experimental group to become significantly more active in the cultural activities of the larger community.

Both male and female experimental groups significantly increased in their creative thinking skills but for different aspects of creative thinking. The female experimental group increased significantly in ideational fluency but not the males. No significant increases in originality were found for either males or females. Males did show an increase in their sensitivity of problems but not the females.

Students participating in the Living Arts Center perceive and reported themselves as having a more creative personality than did the control group. This finding is true for both male and female experimental groups. They also rate themselves more "creative" than did both control groups.

Only the female experimental group earned higher scores of aesthetic sensitivity as determined by the Barron-Welsh Art Scale.

Statistically significant differences between high, middle and low level experimental and control groups at the .05 level or beyond:

VARIABLES	FEMALES			MALES		
	HIGH	MIDDLE	LOW	HIGH	MIDDLE	LOW
Things Done On Your Own Checklist	X					
SCCICA Places Visited		X	X		X	
SCCICA Performances Attended	X			X	X	X
SCCICA Activities	X		X			X
SCCICA Total Score	X		X	X	X	X
Category Test	X				X	
Plot Test			X			
Apparatus Test						X
Creative Rating Scale			X	X		X
Creative Item		X				
(Barron-Welsh Art Scale)						

Analysis of the differences between the levels, high experimental and high control, middle experimental and middle control, and low experimental and low control was conducted by using the Mann-Whitney U Test, a non-parametric test that tests for significant differences between two groups at the .05 level or beyond. For the female experimental group the high level creative girls

were found to have significantly higher scores on five of the eleven variables. The middle group was significantly different from the control group on two variables and the low level on five variables.

For the male group, the high level males were significantly different on three variables, the middle level four variables, and the low level on five variables.

For the male groups, the high level males were significantly different on three variables, the middle level four variables, and the low level five variables.

The results of an earlier study of the influence of the Living Arts Center on developing creative abilities is summarized below:

Satistically significant differences based on "difference" scores between experimental and control groups, male and female on dependent variables at the .05 level and beyond:

GROUPS	DEPENDENT VARIABLES
Female	Things Done On Your Own Checklist
Female, Male	Places Visited Scale
Female, Male	Performances Attended Scale
Female, Male	Activities Participation Scale
Female, Male	SCCICA Total Score
Female	Ideational Fluency Category Test
	Originality Plot Test
Male	Sensitivity to Problems Apparatus Test
Female, Male	Student Creative Rating Scale
Female, Male	Creative Item
Female	Barron-Welsh Art Scale

Chapter IV

METHODOLOGY

In the Fall of 1967, 3,009 students in grades 7, 8, 9 and 10 in the Dayton Public and Parochial Schools expressed their interest in participating in the Living Arts Program. From this group 332 were chosen to participate in the first year of the program. From this group of 332, 188 were selected as an experimental group and were divided into three groups: 62 high, 62 middle, and 64 low creative, based on scores from the Things Done On Your Own Checklist. From the 2,677 students not chosen to participate in the Program, a control group of 188 matched for sex, grade level, school and creative level were selected.

The mean score for the 3,009 students on the Things Done On Your Own Checklist was 36.22 and the standard deviation was 15.67. Students assigned to the high creative level had a score one standard deviation above the mean, low creative level students had a score on standard deviation below the mean and middle level creative students had scores at the mean. Students were also rated by three different teachers on the Student Rating Scale, a 22 item bi-polar scale of personal characteristics that are related to creative behavior. Because of low inter-rater reliability, these scores were not used in the selection process.

As would be expected in a longitudinal study, there

would be some attrition of students in the sample. Shown below in table form are the number of students dropping out of the experimental group.

Attrition rate for female experimental group

Creative Level	Fall, 1967	Winter, 1969	Winter, 1970	Dropouts
	N	N	N	N
High	46	21	10	36
Middle	46	23	6	40
Low	45	16	8	37

For the female high creative group, 14 dropped out because of too many activities; 7 lost interest in the program; 7 moved from Dayton; 2 dropped out and gave no reason; 1 had transportation difficulties and 3 were dropped because of poor attendance.

For the middle level female, 11 moved from Dayton; 13 felt they had too many other activities; 2 dropped because of poor transportation facilities; 1 dropped because of sickness in the family; 2 for lack of interest; 3 did not re-enter and gave no reason; and 1 was withdrawn by her mother.

For the low creative female group, 14 moved from Dayton; 10 had too many other activities; 10 no longer were interested in the program and 1 had difficulty with transportation.

In table form are the sample size for the male experimental group for the second year period.

Attrition Rate for experimental group male

Creative Level	Fall, 1967	Winter, 1969	Winter, 1970	Dropouts
	N	N	N	N
High	16	12	5	4
Middle	16	7	4	9
Low	19	7	2	12

For the high creative male group, 2 moved from Dayton; 2 had too many activities; 2 lost interest in the program; 3 did not register; 1 was suspended and 1 became ill.

For the middle level group, 4 moved from Dayton; 3 had too many other activities; 2 lost interest and 3 did not register.

In the low creative level, 3 moved from Dayton; 3 were dismissed because of poor attendance; 4 had other activities; 5 did not register and 2 lost interest.

The following tests were administered between January, 1970 and March, 1970:

The Student Checklist of Creative Involvement with Community Activities yields four different scores: places visited, performances attended, participation in activities, and a total score. The total number of items to be checked is 63 with spaces for students to add responses.

Performance on this scale is an index of involvement in the larger community both in terms of participation and attendance. A copy of this scale is in the appendix.

The Torrance Tests of Creative Thinking were used to measure certain dimensions of creative behavior. Both the verbal test, Form A and figural tests, Form A were used. The verbal tests yield three different scores: verbal fluency, the ability to produce a large number of ideas with words; verbal flexibility, the ability to produce a variety of kinds of ideas, to shift from one approach to another or to use a variety of strategies; and verbal originality, the ability to produce ideas that are away from the obvious, commonplace, banal, or established.

The figural tests yield four different scores. Figural fluency is best used in understanding the other figural scores. Since the impulsive thinker can achieve rather high scores, the figural fluency scores mean more when compared to scores of originality and elaboration. Figural flexibility is the ability to produce a variety of kinds of ideas, to shift from one approach to another, or to use a variety of strategies using figural stimuli. Figural originality is the ability to produce figural content that is away from the obvious, commonplace, banal, or established. Figural elaboration is the ability to develop, embroider, embellish, carry out or otherwise

elaborate ideas.

The Student Rating Scale, a 22 item bi-polar rating scale that measures personal attributes related to creative behavior, was administered to both experimental and control groups. Reliability estimates for the Student Rating Scale based on the Spearman-Brown formula was .84 with a sample of 92 and .89 with a sample of 126.

Both groups also took the Barron-Welsh Art Scale (2) as a measure of the esthetic factor in creativity. Barron has shown esthetic preference is positively related to verbal fluency, rapid personal tempo. impulsiveness, originality, independence and expansiveness. Esthetic preference is inversely related to rigidity and repressive control of impulses.

Analysis of the Data

Because the experimental group has dwendled in size over the three-year period of the study, it has become necessary to combine the high, middle, and low levels of creativity into a single group for the purpose of analysis. The data will be analyzed by comparing the experimental group, males, females and total, with the control group, males, females and totals. The statistical tests to be used are the parametric t test for total groups and the non-parametric Mann-Whitney U Test, for male and female groups, using a two-tailed test of significance and .01

and .05 as acceptable levels of significance in judging differences between experimental and control groups.

Hypotheses

All the hypotheses tested will be tested by comparing experimental male, female and total groups with control male, female and total group.

1. Scores of the experimental group, on the Student Checklist will be significantly different than scores for the control group.
2. Scores of the experimental group on the Places Visited Scale of the Student Checklist of Creative Involvement with Community Activities (SCCICA) will be significantly different than scores for the control group.
3. Scores of the experimental group on the Performances Attended Scale of the SCCICA will be significantly different than scores for the control group.
4. Scores of the experimental group on the Activities Scale of the SCCICA will be significantly different than scores for the control group.
5. Scores of the experimental group on the SCCICA total will be significantly different than scores of the control group.
6. Scores of the experimental group on the Torrance Tests of Creative Thinking (TTCT)Verbal Fluency

Score will be significantly different than scores of the control group.

7. Scores of the experimental group on the TTCT Verbal Flexibility Score will be significantly different than scores of the control group.

8. Scores of the experimental group on the TTCT Verbal Originality Score will be significantly different than scores of the control group.

9. Scores of the experimental group on the TTCT Figural Fluency Score will be significantly different than scores of the control group.

10. Scores of the experimental group on the TTCT Figural Flexibility Score will be significantly different than scores of the control group.

11. Scores of the experimental group on the TTCT Figural Originality Score will be significantly different than scores of the control group.

12. Scores of the experimental group on the TTCT Figural Elaboration Score will be significantly different than scores of the control group.

13. Scores of the experimental group on the Student Rating Scale will be significantly different than scores of the control group.

14. Scores of the experimental group on the creative item of the Student Rating Scale will be

significantly different than scores of the control group.

15. Scores of the experimental group on the Barron-Welsh Art Scale will be significantly different than scores of the control group.

Chapter V

RESULTS OF THE INVESTIGATION

The results of this study will be analyzed by comparing the total experimental group with the total control group, female with female and male with male.

Table 1

Differences between experimental and control groups on the Things Done On Your Own Checklist taken in September, 1967:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	38.9	18.24	36	43.2	19.08	-0.953 N.S.

Table 2

Differences between female experimental and control groups on the Things Done On Your Own Checklist taken in September, 1967:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	46	15.02	25	37.2	18.19	1.79 N.S.

Table 3

Differences between male experimental and control groups on the Things Done On Your Own Checklist taken in September, 1967:

Male Experimental Group	Male Control Group	
N	N	U
11	11	39 N.S.

The data in Tables 1, 2, and 3 show that there were no significant differences between experimental and control groups, male or female, on the Things Done On Your Own Checklist which was used to identify experimental and control groups at the beginning of the study.

Table 4

Differences between experimental and control groups on the Things Done On Your Own Checklist taken in January, 1970:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	58.9	17.51	36	50.4	16.77	2.04*

*Significant beyond .05 level

Table 5

Differences between female experimental and control groups on the Things Done On Your Own Checklist taken in January, 1970:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	65.8	15.61	25	48.7	18.00	3.44**

**Significant beyond .01 level

Table 6

Differences between male experimental and control groups on the Things Done On Your Own Checklist taken January, 1970:

Male Experimental Group	Male Control Group	
N	N	U
11	11	25.5*

*Significant beyond .05 level

The data in Tables 4, 5, and 6 indicate there are statistically significant differences between the total experimental and control groups on the Things Done On Your Own Checklist after three years of exposure to the Living Arts Program. These differences are significant at the .05 level. Differences between female groups are

significant at the .01 level. Differences between male groups are significant at the .05 level. These data support the first hypothesis.

Table 7

Differences between experimental and control groups on the Places Visited Scale of SCCICA:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	14.5	2.53	36	12.2	3.89	2.86**

**Significant beyond the .01 level

Table 8

Differences between female experimental and control groups on the Places Visited Scale of SCCICA:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	15.1	2.78	25	11.9	3.94	3.14**

**Significant beyond .01 level

Table 9

Differences between male experimental and control groups on the Places Visited Scale of SCCICA.

Male Experimental Group	Male Control Group	
N	N	U
11	11	26.50*

*Significant beyond .05 level

Tables 7, 8, and 9 indicate significant differences were found between total female and male experimental groups and the corresponding control groups. These data support the acceptance of the second hypothesis.

Table 10

Differences between experimental and control groups on the Performances Attended Scale of SCCICA:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	11.2	4.09	30	8.3	4.74	2.59**

**Significant beyond .01 level

Table 11

Differences between female experimental and control groups on the Performances Attended Scale of SCCICA:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	12.2	3.96	25	7.7	4.91	3.66**

**Significant beyond .01 level

Table 12

Differences between male experimental and control groups on the Performances Attended Scale of SCCICA:

Male Experimental Group	Male Control Group	
N	N	U
11	11	29.00*

*Significant beyond .05 level.

Tables 10, 11, and 12 indicate the third hypothesis is accepted. The hypothesis stated all experimental groups will be significantly different than all control groups on the Performances Attended Scale of SCCICA.

Table 13

Differences between experimental and control groups on the Activities Scale of SCCICA:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	11.3	4.34	36	8.3	3.60	3.12**

**Significant beyond .01 level

Table 14

Differences between female experimental and control groups on the Activities Scale of the SCCICA:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	12.4	4.18	25	7.4	2.96	4.67***

***Significant beyond .001 level

Table 15

Differences between male experimental and control groups on the Activities Scale of the SCCICA:

Male Experimental Group	Male Control Group	
N	N	U
11	11	11.00***

***Significant beyond .001 level

Tables 13, 14, and 15 indicated the fourth hypothesis can be accepted. The data indicates all experimental groups are significantly different than the control group on the Activities Scale of the SCCICA.

Table 16

Differences between experimental and control groups on the SCCICA total score:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	36.9	9.53	36	28.7	10.45	3.40***

***Significant beyond .001 level

Table 17

Differences between female experimental and control groups on the SCCICA total score:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	39.7	9.33	25	27.2	10.2	4.30***

***Significant beyond .001 level

Table 18

Differences between male experimental and control groups on the SCCICA total score:

Male Experimental Group	Male Control Group	
N	N	t
11	11	22.50*

*Significant beyond .05 level

Tables 16, 17, and 18 indicate the fifth hypothesis can be accepted. Differences between the total and female experimental groups and control group are significant beyond the .001 level while the male experimental group has a U difference that is significant beyond the .05 level.

Table 19

Differences between experimental and control groups on the Verbal Fluency Score of TTCT:

Total Experimental Group		Total Control Group		
N	Mean SD	N	Mean SD	t
	55.7 8.32		46.7 10.49	3.91***

***Significant beyond .001 level

Table 20

Differences between female experimental and control groups on the Verbal Fluency Score of TTCT:

Female Experimental Group		Female Control Group		
N	Mean SD	N	Mean S	t
23	55.2 8.14	25	45.00 1132	3.51**

**Significant beyond .01 level

Table 21

Differences between male experimental and control groups on the Verbal Fluency Score of TTCT:

Male Experimental Group	Male Control Group	
N	N	U
11	11	38.5*

*Significant beyond .05 level

Data found in Tables 19, 20, and 21 support the acceptance of hypothesis six. Significant differences in favor of all three experimental groups are shown in the three tables.

Table 22

Differences between experimental and control groups on the Verbal Flexibility Score of TTCT:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	73.0	9.86	36	63.8	16.5	2.77***

***Significant beyond .01 level

Table 23

Differences between female experimental and control groups on the Verbal Flexibility Score of TTCT:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	73.3	10.49	25	62	18.14	2.58*

*Significant beyond .05 level

Table 24

Differences between male experimental and control groups on the Verbal Flexibility Score of TTCT:

Male Experimental Group	Male Control Group	
N	N	U
11	11	32.00*

*Significant beyond .05 level

The seventh hypothesis concerning verbal fluency is supported as all three experimental groups are significantly different from control groups. Data in Tables 22, 23, and 24 show this information.

Table 25

Differences between experimental and control groups on the Verbal Originality Score of TTCT:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	61.6	11.09	36	52.8	13.90	2.86**

**Significant beyond .01 level

Table 26

Differences between female experimental and control groups on the Verbal Originality Score of TTCT:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	63.3	12.48	25	52.7	15.11	2.61*

*Significant beyond .05 level

Table 27

Differences between male experimental and control groups on the Verbal Originality Score of TTCT:

Male Experimental Group	Male Control Group	
N	N	U
11	11	31.50*

*Significant beyond .05 level

Data supporting the eighth hypothesis concerning Verbal Originality is found in Tables 25, 26, and 27. All three experimental groups show significant differences over the control group.

Table 28

Differences between experimental and control groups on the Figural Fluency Score of TTCT:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	42.4	7.80	36	39.4	10.6	1.30 N.S.

Table 29

Differences between female experimental an control groups on the Figural Fluency Score of TTCT:

Female Experimental Group			Female Contro Group			
N	Mean	SD	N	Mean	SD	t
23	42.9	7.65	25	39.00	11.0	1.36 N.S.

Table 30

Differences between male experimental andcontrol groups on the Figural Fluency Score of TTCT:

Male Experimental Group	Male Control Group	
N	N	
11	11	41.0 N.S.

The ninth hypothesis concerning Figural Fluency is not supported. This data is shown in Tables 1, 29, and 30 where none of the differences are significant.

Table 31

Differences between experimental and control groups on the Figural Flexibility Score of TTCT:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	47.6	8.34	36	44.9	10.60	1.17 N.S.

Table 32

Differences between female experimental and control groups on the Figural Flexibility Score of TTCT:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	47.9	7.36	25	44.4	11.25	1.26 N.S.

Table 33

Differences between male experimental and control groups on the Figural Flexibility Score of TTCT:

Male Experimental Group	Male Control Group	
N	N	U
11	11	49.50 N.S.

The data in Tables 31, 32, and 33 indicate the tenth hypothesis concerning Figural Flexibility is not accepted. The differences between male, female, and total groups are not significant.

Table 34

Differences between experimental and control groups on the Figural Originality Score of the TTCT:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	38.2	12.52	36	44.1	13.3	-1.88 N.S.

Table 35

Differences between female experimental and control groups on the Figural Originality Score of the TTCT:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	40.8	11.29	25	44.0	14.44	-0.81 N.S.

Table 36

Differences between male experimental and control groups on the Figural Originality Score of the TTCT:

Male Experimental Group	Male Control Group	
N	N	U
11	11	45.50 N.S.

The eleventh hypothesis concerning Figural Originality is not accepted. The data is found in Tables 34, 35, and 36.

Table 37

Differences between experimental and control groups on the Figural Elaboration Score of the TTCT:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	55.5	13.32	36	55.5	16.3	0.0 N.S.

Table 38

Differences between female experimental and control groups on the Figural Elaboration Score of the TTCT:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	58.5	9.72	25	54.1	16.60	1.10 N.S.

Table 39

Differences between male experimental and control groups on the Figural Elaboration Score of the TTCT:

Male Experimental Group	Male Control Group	
N	N	U
11	11	57.30 N.S.

Data relevant to the twelfth hypothesis concerning Figural Elaboration is found in Tables 37, 38, and 39. The hypothesis cannot be accepted.

Table 40

Differences between experimental and control groups on the Student Rating Scale:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	114.5	11.88	36	109.1	13.10	1.78 N.S.

Table 41

Differences between female experimental and control groups on the Student Rating Scale:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	115.3	12.21	25	108.0	12.8	1.97 N.S.

Table 42

Differences between male experimental and control group on the Student Rating Scale:

Male Experimental Group	Male Control Group	
N	N	U
11	11	31.00*

*Significant beyond .05 level

Information relative to the thirteenth hypothesis concerning personal rating of creative characteristics is found in Tables 40, 41, and 42. The hypothesis is accepted for only the male group but not the female or total groups.

Table 43

Differences between experimental and control groups on the creative item on the Student Rating Scale:

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	5.7	.87	36	5.6	1.09	.35 N.S.

Table 44

Differences between female experimental and control groups on the creative item on the Student Rating Scale:

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	5.9	.68	25	5.5	1.17	1.66 N.S.

Table 45

Differences between male experimental and control groups on the creative item on the Student Rating Scale:

Male Experimental Group	Male Control Group	
N	N	U
11	11	50.50 N.S.

Data in Tables 43, 44, and 45 are relative to finding significant differences in student rating of self on the item "creative". The hypothesis cannot be accepted because there are no significant differences as shown in the tables.

Table 46

Differences between experimental and control groups on the Barron-Welsh Art Scale.

Total Experimental Group			Total Control Group			
N	Mean	SD	N	Mean	SD	t
34	31.9	12.04	36	27.9	12.2	1.33 N.S.

Table 47

Differences between female experimental and control groups on the Barron-Welsh Art Scale.

Female Experimental Group			Female Control Group			
N	Mean	SD	N	Mean	SD	t
23	31.0	11.66	25	27.6	11.93	0.99 N.S.

Table 48

Differences between male experimental and control groups on the Barron-Welsh Art Scale.

Male Experimental Group	Male Control Group	
N	N	t
11	11	28.55*

*Significant beyond .05 level

Tables 46, 47, and 48 are solutions to the hypothesis that stated the experimental groups will be significantly different from control groups on the Barron-Welsh Art Scale. Only the male experimental group is significantly different from the male control group.

Table 49

Significant differences at the .05 level or beyond:

VARIABLES	TOTAL GROUP	FEMALE	MALE
Things Done On Your Own Checklist, Jan., 1970	X	X	X
SCCICA Places Visited	X	X	X
SCCICA Performances Attended	X	X	X
SCCICA Activities	X	X	X
SCCICA Total Score	X	X	X
Verbal Fluency	X	X	X
Verbal Flexibility	X	X	X
Verbal Originality	X	X	X
Figural Fluency			
Figural Flexibility			
Figural Originality			
Figural Elaboration			X
Student Rating Scale			
Creative Item			X
Barron-Welsh Art Scale			

Table 44 summarizes the significant differences between the experimental and control groups on all of the variables tested.

Table 50

Means, standard deviations and t ratios for total experimental and total control groups:

	TOTAL EXPERIMENTAL		TOTAL CONTROL		
	M	SD	M	SD	t
Things Done On Your Own Checklist	58.9	17.519	50.4	16.770	2.040*
Places Visited	14.5	2.536	12.2	3.899	2.865**
Performances Attended	11.2	4.091	8.1	4.715	2.909**
SCCICA Activities	11.3	4.344	8.3	3.602	3.129**
SCCICA Total Score	36.9	9.536	28.7	10.457	3.402***
Verbal Fluency	55.7	8.326	46.7	10.498	3.917***
Verbal Flexibility	73.0	9.867	63.8	16.524	2.779***
Verbal Originality	61.6	11.099	52.8	13.902	2.866**
Figural Fluency	42.4	7.800	39.4	10.966	1.300 N.S.
Figural Flexibility	47.6	8.347	44.9	10.606	1.173 N.S.
Figural Originality	38.2	12.526	44.1	13.311	-1.887 N.S.
Figural Elaboration	55.5	13.329	55.5	16.316	0.0 N.S.
Student Rating Scale	114.5	11.880	109.1	13.101	1.780 N.S.
Creative Item	5.7	0.873	5.6	1.092	0.357 N.S.
Barron-Welsh Art Scale	31.9	12.042	27.9	12.231	1.330 N.S.

*Significant beyond .05 level

**Significant beyond .01 level

***Significant beyond .001 level

Table 51

Means, standard deviations and t ratios for female experimental and control groups:

	FEMALE EXPERIMENTAL		FEMALE CONTROL		
	M	SD	M	SD	t
Things Done On Your Own Checklist	65.8	15.611	48.7	18.001	3.447**
SCCICA Places Visited	15.1	2.781	11.9	3.944	3.147**
SCCICA Performances Attended	12.2	3.967	7.7	4.914	3.449**
SCCICA Activities	12.4	4.189	7.4	2.961	4.674***
SCCICA Total Score	39.7	9.333	27.2	10.257	4.308***
Verbal Fluency	55.2	8.140	45.0	11.325	3.510**
Verbal Flexibility	73.3	10.495	62.0	18.143	2.584*
Verbal Originality	63.3	12.482	52.7	15.116	2.610*
Figural Fluency	42.9	7.650	39.0	11.608	1.366 N.S.
Figural Flexibility	47.9	7.360	44.4	11.259	1.263 N.S.
Figural Originality	40.8	11.293	44.0	14.445	-0.817 N.S.
Figural Elaboration	58.5	9.722	54.1	16.606	1.101 N.S.
Student Rating Scale	115.3	12.216	108.0	12.872	1.971 N.S.
Creative Item	5.9	0.680	5.5	1.179	1.469 N.S.
Barron-Welsh Art Scale	31.0	11.660	27.6	11.938	0.958 N.S.

*Significant beyond .05 level

**Significant beyond .01 level

***Significant beyond .001 level

Table 52

Means, standard deviations and U results for male experimental and control groups:

	MALE EXPERIMENTAL		MALE CONTROL		
	M	SD	M	SD	t
Things Done On Your Own Checklist	72.0	12.798	53.4	19.361	25.500*
SCCICA Places Visited	16.4	1.567	12.6	4.632	26.500*
SCCICA Performances Attended	12.5	2.622	9.0	6.465	29.000*
SCCICA Activities	13.8	3.027	8.2	2.926	11.000***
SCCICA Total Score	42.7	5.350	30.4	12.564	22.500*
Verbal Fluency	55.0	8.367	42.7	11.037	20.500*
Verbal Flexibility	71.8	7.834	58.6	19.377	32.000*
Verbal Originality	65.0	14.663	51.8	13.467	31.500*
Figural Fluency	43.2	7.508	37.7	10.808	41.000 N.S.
Figural Flexibility	47.3	7.538	44.1	10.913	49.500 N.S.
Figural Originality	38.2	12.505	43.2	12.303	45.500 N.S.
Figural Elaboration	55.0	9.487	57.6	19.582	57.500 N.S.
Student Rating Scale	119.1	12.903	106.6	11.147	31.000*
Creative Item	5.8	0.874	5.4	1.433	50.500 N.S.
Barron-Welsh Art Scale	33.4	11.902	22.1	12.054	28.500*

*Significant beyond .05 level

***Significant beyond .001 level

Chapter VI

SUMMARY AND CONCLUSIONS

This study was an evaluation of the Living Arts Program from September, 1967 through June, 1970 with special emphasis on judging the program goals of developing various dimensions of creative behavior in adolescents. The study was conducted by selecting an experimental and control group based on scores of the Things Done On Your Own Checklist. Both groups were matched for sex, grade and school attended. Both experimental and control groups took the following tests in the late winter and early spring of 1970: Things Done On Your Own Checklist; Student Checklist of Creative Involvement with Community Activities (SCCICA, which yields four different scores: places visited, performances attended, activities, and total score); Torranco Tests of Creative Thinking, verbal and figural; Student Creative Rating Scale; and the Barron-Welsh Art Scale. Statistical analysis was conducted by comparing the experimental group with the control group with analysis by sex. The t test and Mann-Whitney U test were used where appropriate.

The results indicate the male, female, and total experimental groups show more individual creative behavior when compared to the experimental groups on the Things Done On Your Own Checklist.

All experimental groups, male, female and total are significantly different from the control group on the Student Checklist of Creative Involvement in Community Activities. The higher scores earned by the experimental groups indicate that participation in the Living Arts Program had a significant effect on participants by encouraging them to be more active by visiting places of culture such as art museums, concerts, libraries, parks, attending performances, and participating in cultural activities.

All experimental groups earned significantly higher scores on the verbal tests of the Torrance Tests of Creative Thinking than the control group. Specifically the experimental groups had higher scores on verbal fluency, the ability to produce a large number of ideas with words. The differences in favor of the experimental groups are all statistically significant; the total group at the .001 level, the females at .01 level, and the males at .05 level.

In terms of verbal flexibility, all experimental groups earned statistically significant higher scores than the control group. This data indicates the Living Arts Program has influenced its students in the development of an ability to produce a variety of kinds of ideas, to shift from one approach to another, or to use a variety of strategies. Lower scores on verbal flexibility might

show a tendency to stick to a narrow range of responses as a possible result of rigid thinking, low motivation, narrow range of information or experiences and limited intellectual energy.

On the verbal originality score, all the experimental groups were higher than the control group. This indicates the Living Arts Program helped its students to produce ideas that are away from the obvious, commonplace, banal or established. The students in the program exhibit a higher amount of intellectual energy and may be perceived as non-conforming. Students earning high scores on verbal originality is able to make big mental leaps but is not necessarily erratic or impulsive in his behavior.

From the data on verbal creativity it is clear the Living Arts Program has had a significant influence on its students in developing increased fluency, flexibility, and originality. This information indicates the program has succeeded in achieving its goals with respect to verbal creativity.

The results of the investigation indicate there are no statistically significant differences between the experimental and control groups on all measures of figural creativity. The interpretation of verbal and figural tests of creativity are basically the same except that the tests

are concerned with figural rather than verbal modes of thinking. At this time, it is difficult to explain why the experimental group earned significantly higher scores on verbal tests but not figural tests. This situation will be investigated in depth when time permits.

Only the experimental male group showed a statistically significant higher score than the control group on the Student Rating Scale. This data suggests that the males in the program perceive and report themselves as having a more "creative" personality than the control group. Students who rate themselves high on the Student Rating Scale report themselves as being mentally active, curious, sensitive to ideas, confident, aesthetic and ingenious.

A separate item from the Student Rating Scale was also analyzed. Students were asked to judge themselves on the dimension "creative". No significant differences were found when comparing all experimental and control groups on this item.

Only the experimental male group earned significantly higher scores than the male control group on the Barron-Welsh Art Scale. This finding indicates the males in the program are more aesthetically sensitive, original, and independent in judgment.

The findings of this three-year study support the

belief that creative behavior can be developed. An environment that places high value on creativity, teachers and administrators who encourage creative behavior, and children who have developed evaluative behavior conducive to creative thinking characterize the Living Arts Program.

It seems clear to the writer, after three years of objective evaluation of the program, that the power of the total environment of the Center has had a profound effect on creative activities of the students. The results of this research substantiate the earlier work cited by Torrance, Brown, Wallach and Kogan that deliberate efforts to improve specific dimensions of creativity are successful.

Torrance has suggested that creative children possess a need to know themselves and their environment and to seek out new experiences. He believes that creative behavior can be developed best by learning through satisfying the child's natural curiosity; by having a teacher who trusts and respects the dignity and worth of the individual.

At the Center, instructional methods emphasized

individual projects, group discussions, and trips to cultural events. A regular staff was assisted by many local artists who served as part-time instructors.

Students and faculty were stimulated by face to face meetings with guest artists of national reputation. The guest artist performed, lectured, and demonstrated his talents for students in the program, in the regular schools and for the general public.

In summary, this three-year study shows that students enrolled in the program, when compared to a matched control group, became more deeply involved in cultural activities of the community, developed verbal skills of creativity which include fluency, flexibility and originality and engaged in more independent creative activities. No significant differences were found for figural creativity which the male group earned higher scores on personal rating of creative behavior and aesthetic preference.

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